IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	Attorney Docket No:
Anthony P. Peirce, et al.	)	56.0468
	)	
Serial No.: 09/301,961	)	Group Art Unit: 2123
	)	
Filed: April 4, 1999	)	Examiner: Day, Herng-Der
	)	
For: Method and Apparatus for Hydraulic	)	
Fracturing Analysis and Design	)	

AFFIDAVIT UNDER 37 CFR 1.132

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Eduard Siebrits, being duly sworn, does hereby depose and say as follows:

I am one of the co-inventors of the above-identified patent application.

I received and hold a Bachelor of Science Degree in Civil Engineering from the University of Cape Town, South Africa in 1984; and I received a Masters of Science Degree in Civil Engineering from the University Cape Town, South Africa in 1987, with a thesis entitled "Three-Dimensional Elastodynamic Shear Fracture Propagation and Ground Motion Simulation Model". I received the degree of Doctor of Philosophy in Geo Engineering from the University of Minnesota, Minneapolis in 1992, with a thesis on "Two-Dimensional Time Domain Elastodynamic Displacement Discontinuity Method with Mining Applications";

I was employed from 1987 to 1995 by COMRO Rock Engineering, Johannesburg and CSIR Mining Technology, Johannesburg, working on 2D and 3D numerical modeling of rockburst processes in deep gold mines, including back analysis of a rockburst accident, developing numerical models based on boundary element, finite element, and finite difference methods;

I have been employed since 1995 by the Dowell Division of Dowell Schlumberger Inc, that later merged with Schlumberger Technology Corporation; working on 2D fluid flow models, 2D and planar 3D hydraulic fracturing simulators, refracture reorientation in tight gas wells, and comparisons of commercially available planar 3D simulators in the petroleum industry;

I have contributed to more than 20 publications, as shown by the attached list.

I am presently employed by Schlumberger Technology Corporation, the assignee of the above-identified application, in Sugar Land, Texas and currently the Team Leader of the Modeling & Mechanics Group of the Well Services division;

I am personally well familiar with the Grid Oriented Hydraulic Fracture Extension Replicator simulator (GOHFER), and with the content of the Doctor of Philosophy thesis written by R. Barree, as the basis of that work. R. Barree has always maintained that his model is applicable to a multi-layered reservoir and therefore should not require additional approaches such as the use of Fourier transforms as proposed by the patent application 09/301,961. Anthony Pierce and I have however concluded that this statement is wrong and that Barree's model relies on a postulate that implies uniform elastic properties for the whole reservoir, and consequently, is not physically or mathematically sound for a multi-layered reservoir.

I am also well familiar with the work of A. M. Linkov, A.A. Linkova and A.A. Savitski published in the article entitled "An Effective Method for Multi-Layered Media with Cracks and Cavities." In 1997, I approached A. A. Savitski for a potential collaboration but he advised me that the approach reported in their paper was not applicable for the case of cavities or cracks intersecting the interfaces in a multi-layered medium. As shown in figures 4 and 12 of the current patent application, a fracture in a subterranean formation typically intersects multiple layer boundaries. Therefore, Anthony Pierce and I concluded that we could not simply use this approach to overcome the deficiencies of the GOHFER model and we had to develop a new
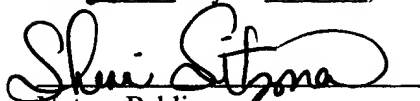
model, based on the approach suggested by Linkov but modified to make it provide a model of fracture development applicable to a multi-layered formation.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Eduard Siebrits

Sworn and subscribed before me
this 25th day of June, 2003

Notary Public
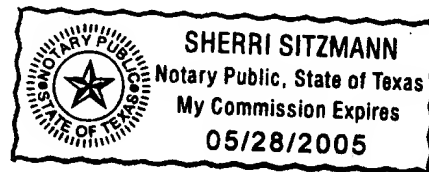
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